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EXAMINER	
CUTLER, ALBERT H	

ART UNIT	PAPER NUMBER
2622	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/664,508	Applicant(s) KADOHARA, TERUTAKE	
	Examiner ALBERT H. CUTLER	Art Unit 2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 February 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1. This office action is responsive to communication filed on February 25, 2009.

Information Disclosure Statement

2. The Information Disclosure Statement (I.D.S.) mailed on February 6, 2009 was received and has been considered by the examiner.

Response to Arguments

3. Applicant's arguments with respect to claims 1-10 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okisu et al. (US 6,571,022) in view of Yoneda et al. (US 2002/0067416).

Consider claim 1, Okisu et al. teaches:

An image sensing apparatus (camera, figures 2 and 8) comprising:

an image sensing element having a first light receiving area (CCD, 12) and a second light receiving area (CCD, 13, See figures 2 and 8, column 6, lines 16-27. Two color image pickup devices (12 and 13) are situated behind the lens (2) to capture left and right partial images.);

a correction device which corrects a pixel signal output from said image sensing element (See figures 8 and 9. The image sensing element (12, 13) outputs signals to an image processor (19). The image processor (see figure 9) contains a shading corrector (194, i.e. a correction device), column 7, lines 61-67. The shading corrector (194) corrects output levels of pixels of the image sensing element (12, 13), column 8, lines 19-22.); and

a control device (CPU, 25, figure 8) which controls said correction device (194) to multiply a correction value to pixel signals read out from the first light receiving area (12) and the second light receiving area (13) via the same channel and to write the pixel signals to which the correction value is multiplied to a memory (HD Card 10) as pixel data of a captured image (See figures 8 and 9, column 7, lines 17-21. The accumulated charges of light receiving area (12) and then the accumulated charges of light receiving area (13) are successively output. Figure 9 clearly shows only one channel leading to the A/D converter, image memory, etc. The correction device (194) uses a correction table to correct the pixel signal levels, column 8, lines 19-22. The correction table sets a correction coefficient K (i.e. correction value) for each pixel, column 9, lines 55-58.

The correction is applied to the pixels of each light receiving area (12, 13), column 10, lines 23-27. An image synthesizer composes an image (G) from the left and right images (G1 and G2) sensed by the respective light-receiving areas (12 and 13), and outputs the frame image (G) to and HD card (10) via an interface (output I/F, 197), column 15, lines 21-27.)., wherein

said correction device (194) corrects the pixel signal output from said image sensing element so that a difference between the pixel signals read out from the first light receiving area (12) and the second light receiving area (13) is canceled (The correction device (194) corrects the pixel signal output from the respective light receiving areas (12, 13) such that the output level is substantially set at the same level as the output level corresponding to the center of the sensing surface, column 9, lines 50-59, column 10, lines 23-27, see figure 20. Furthermore, Okisu et al. teaches that the correction table used compensates for a difference of the photoelectric conversion characteristic between the light receiving areas (12 and 13). See figure 45, step 22, column 23, lines 28-48. Therefore, the pixel signals output are normalized to the same level, and any differences are cancelled out.).

However, Okisu et al. does not explicitly teach that the light receiving areas (12 and 13) are formed on an image pickup surface of a semiconductor substrate by a plurality of divisional exposure operations, or that pixel signals obtained by the first light receiving area and the second light receiving area are read out from the image sensing element via the same channel.

Yoneda et al. similarly teaches an imaging device (figure 4) with multiple light receiving regions (image pickup areas 901, 902, 903 and 904), paragraph 0053. Yoneda et al. also similarly teaches that different light receiving areas can be read out of the image sensing element via different channels (See output terminals (914), figure 6.), and that the imaging device can comprises a CCD imaging device (paragraph 0057).

However, in addition to the teachings of Okisu et al., Yoneda et al. teaches that the light receiving areas (901-904) are formed on an image pickup surface of a semiconductor substrate by a plurality of divisional exposure operations (The image pickup areas (901-904) are formed on the "same semiconductor chip", paragraph 0053, lines 1-9. See also paragraph 0060 and figure 11.), and that pixel signals obtained by the multiple light receiving areas (901-904) are read out from the image sensing element via the same channel (See figure 4. All charges are output to amplifier 913, paragraph 0053. Yoneda et al. details that in a CCD configuration, the horizontal shift registers (911a and 911b) of figure 4 are replaced with a single horizontal transfer CCD, paragraph 0057. Therefore, all charges output by the horizontal transfer CCD are output via the same channel.).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to have the light receiving regions taught by Okisu et al. formed on an image pickup surface of a semiconductor substrate by a plurality of divisional exposure operations as taught by Yoneda et al. for the benefit of obtaining a more integrated image sensing apparatus with fewer parts, and to have the pixel signals

obtained by the light receiving areas taught by Okisu read out via the same channel as taught by Yoneda et al. for the benefit of enabling easy processing and eliminating dispersion caused having multiple output channels (Yoneda et al., paragraphs 0072 and 0073).

Consider claim 2, and as applied to claim 1 above, Okisu et al. further teaches that said correction device divides the partial image sensing-region light receiving areas into a plurality of blocks, and performs correction using a different correction value for each block (Correction is performed on each pixel, column 9, lines 55-58. Furthermore, the image synthesis can be performed by dividing the partial light receiving areas into a plurality of blocks (See figure 29, column 16, line 60 through column 17, line 27). Therefore, because each pixel has a different correction value, each block will also have a different correction value.).

Consider claim 3, and as applied to claim 1 above, Okisu et al. further teaches:

The light receiving areas (12, 13) include at least three partial image sensing regions in one direction, and said correction device corrects at least two of the three partial image sensing regions with correction values by using as a reference a central partial image sensing region selected from the three partial image sensing regions (Okisu et al. teaches that three or more image pickup regions (i.e. light receiving areas) can be used, column 23, line 64 through column 24, line 2. Okisu et al. further teaches

normalizing the pixel values to the center of a light receiving surface (i.e. a central partial image sensing region), column 9, lines 50-55.).

Consider claim 4, and as applied to claim 1 above, Okisu et al. further teaches that said correction device performs correction using different correction values in a boundary direction between light receiving areas (Because different correction values are used for each pixel (column 9, lines 55-58) of each light receiving area (column 10, lines 24-27), and a boundary can be randomly produced using a variety of shapes (see figure 26A and 26B, column 15, line 51 through column 16, line 3), different correction values are used based on which pixels of the various light receiving regions comprise the boundary.).

Consider claim 5, and as applied to claim 1 above, Okisu et al. further teaches that said correction device performs correction using a different correction value for each color (The light receiving regions each contain a plurality of color filters, column 6, lines 42-45. A different correction value is used for each pixel, column 9, lines 55-58. The correction device (194) applies correction to each color, column 23, lines 44-48. Therefore, because different correction values are applied to each pixel of each color, a different correction value is applied to each color.).

Consider claim 6, Okisu et al. teaches:

An image sensing apparatus (camera, figures 2 and 8) comprising:

an image sensing element having a first light receiving area (CCD, 12) and a second light receiving area (CCD, 13, See figures 2 and 8, column 6, lines 16-27. Two color image pickup devices (12 and 13) are situated behind the lens (2) to capture left and right partial images.) on which color filters of a plurality of colors for sensing an object image are formed (Red, Green and Blue color filters are formed on the surfaces of the light receiving areas (12, 13), column 6, lines 42-45.);

a correction device which corrects variations between pixels in the light receiving areas (See figures 8 and 9. The image sensing element (12, 13) outputs signals to an image processor (19). The image processor (see figure 9) contains a shading corrector (194, i.e. a correction device), column 7, lines 61-67. The shading corrector (194) corrects output levels of pixels of the image sensing element (12, 13), column 8, lines 19-22.) by using a different correction value for each color (The light receiving regions each contain a plurality of color filters, column 6, lines 42-45. A different correction value is used for each pixel, column 9, lines 55-58. The correction device (194) applies correction to each color, column 23, lines 44-48. Therefore, because different correction values are applied to each pixel of each color, a different correction value is applied to each color.); and

a control device (CPU, 25, figure 8) which controls said correction device (194) to multiply the correction value to pixel signals read out from the first light receiving area (12) and the second light receiving area (13) via the same channel and to write the pixel signals to which the correction value is multiplied to a frame memory (HD Card 10) as pixel data of a captured image (See figures 8 and 9, column 7, lines 17-21. The

accumulated charges of light receiving area (12) and then the accumulated charges of light receiving area (13) are successively output. Figure 9 clearly shows only one channel leading to the A/D converter, image memory, etc. The correction device (194) uses a correction table to correct the pixel signal levels, column 8, lines 19-22. The correction table sets a correction coefficient K (i.e. correction value) for each pixel, column 9, lines 55-58. The correction is applied to the pixels of each light receiving area (12, 13), column 10, lines 23-27. An image synthesizer composes an image (G) from the left and right images (G1 and G2) sensed by the respective light-receiving areas (12 and 13), and outputs the frame image (G) to and HD card (10) via an interface (output I/F, 197), column 15, lines 21-27.)., wherein

said correction device (194) corrects the pixel signal output from said image sensing element so that a difference between the pixel signals read out from the first light receiving area (12) and the second light receiving area (13) is canceled (The correction device (194) corrects the pixel signal output from the respective light receiving areas (12, 13) such that the output level is substantially set at the same level as the output level corresponding to the center of the sensing surface, column 9, lines 50-59, column 10, lines 23-27, see figure 20. Furthermore, Okisu et al. teaches that the correction table used compensates for a difference of the photoelectric conversion characteristic between the light receiving areas (12 and 13). See figure 45, step 22, column 23, lines 28-48. Therefore, the pixel signals output are normalized to the same level, and any differences are cancelled out.).

However, Okisu et al. does not explicitly teach that the light receiving areas (12 and 13) are formed on an image pickup surface of a semiconductor substrate by a plurality of divisional exposure operations, or that pixel signals obtained by the first light receiving area and the second light receiving area are read out from the image sensing element via the same channel.

Yoneda et al. similarly teaches an imaging device (figure 4) with multiple light receiving regions (image pickup areas 901, 902, 903 and 904), paragraph 0053. Yoneda et al. also similarly teaches that different light receiving areas can be read out of the image sensing element via different channels (See output terminals (914), figure 6.), and that the imaging device can comprises a CCD imaging device (paragraph 0057).

However, in addition to the teachings of Okisu et al., Yoneda et al. teaches that the light receiving areas (901-904) are formed on an image pickup surface of a semiconductor substrate by a plurality of divisional exposure operations (The image pickup areas (901-904) are formed on the “same semiconductor chip”, paragraph 0053, lines 1-9. See also paragraph 0060 and figure 11.), and that pixel signals obtained by the multiple light receiving areas (901-904) are read out from the image sensing element via the same channel (See figure 4. All charges are output to amplifier 913, paragraph 0053. Yoneda et al. details that in a CCD configuration, the horizontal shift registers (911a and 911b) of figure 4 are replaced with a single horizontal transfer CCD, paragraph 0057. Therefore, all charges output by the horizontal transfer CCD are output via the same channel.).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to have the light receiving regions taught by Okisu et al. formed on an image pickup surface of a semiconductor substrate by a plurality of divisional exposure operations as taught by Yoneda et al. for the benefit of obtaining a more integrated image sensing apparatus with fewer parts, and to have the pixel signals obtained by the light receiving areas taught by Okisu read out via the same channel as taught by Yoneda et al. for the benefit of enabling easy processing and eliminating dispersion caused having multiple output channels (Yoneda et al., paragraphs 0072 and 0073).

Consider claim 7, and as applied to claim 6 above, Okisu et al. further teaches:

said image sensing element outputs a signal from a different output unit for each light receiving area (See figures 8 and 9. Light receiving areas (12, 13) each have different outputs.), and said correction device performs correction using a different correction value for each output unit (Different correction values are used for each pixel, column 9, lines 55-58. Furthermore, different correction tables are formed for each output unit of the light receiving areas (12, 13), column 12, lines 48-50.).

Consider claim 8, and as applied to claim 6 above, Okisu et al. further teaches that correction is performed using a different correction value for each lens (Different correction values are used for each pixel, column 9, lines 55-58. Each pixel has a

separate lens which has a different optical characteristic. See figures 11-13, column 8, lines 47-58.).

Consider claim 9, and as applied to claim 6 above, Okisu et al. further teaches that correction is performed using a different correction value for each exit pupil position of an optical system (Different correction values are used for each pixel, column 9, lines 55-58. Each pixel has a separate lens which has a different optical characteristic, which different optical characteristic would cause different exit pupil positions. See figures 11-13, column 8, lines 47-58.).

Consider claim 10, and as applied to claim 6 above, Okisu et al. further teaches that correction is performed using a different correction value for each F-number (Different correction values are used for each pixel, column 9, lines 55-58. Each pixel has a separate lens which has a different optical characteristic, which different optical characteristic would cause each lens to have a different F-number. See figures 11-13, column 8, lines 47-58.).

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALBERT H. CUTLER whose telephone number is (571)270-1460. The examiner can normally be reached on Mon-Thu (9:00-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on (571) 272-7564. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AC

/Sinh N Tran/
Supervisory Patent Examiner, Art Unit 2622